

ABSTRACT

The mobility enhancement of a strained silicon layer is augmented through incorporation of carbon into a strained silicon lattice to which strain is also imparted by an underlying silicon germanium layer. The presence of the relatively small carbon atoms effectively increases the spacing within the strained silicon lattice and thus imparts additional strain. This enhancement may be implemented for any MOSFET device including silicon on insulator MOSFETs, and is preferably selectively implemented for the PMOS components of CMOS devices to achieve approximately equal carrier mobility for the PMOS and NMOS devices.